

REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 3, 7, 11, 12, 14, 15, 19, 21, 24, 27, 30-32, and 34-39 are pending in this application, Claims 4 and 33 having been canceled without prejudice or disclaimer; Claims 3, 35, and 38 having been currently amended; and Claim 39 having been added. Support for amended Claims 3, 35, and 38 can be found, for example, in the original claims, drawings, and specification as originally filed.¹ No new matter has been added.

In the outstanding Office Action, Claims 3, 4, 7, 11, 12, 14, 15, 19, 30-32, 34, and 35 were rejected under 35 U.S.C. §103(a) as unpatentable over Sato et al. (U.S. Patent Publication No. 2003/0132701; hereinafter “Sato”); Claim 24 was rejected under 35 U.S.C. §103(a) as unpatentable over Sato in view of Yu et al. (U.S. Patent Publication No. 2002/0063520; hereinafter “Yu”); Claim 21 was rejected under 35 U.S.C. §103(a) as unpatentable over Sato in view of Sylvester et al. (U.S. Patent Publication No. 2004/0252933; hereinafter “Sylvester”); Claim 27 was rejected under 35 U.S.C. §103(a) as unpatentable over Sato in view of Kuma et al. (U.S. Patent Publication No. 2003/0127968; hereinafter “Kuma”); and Claims 3, 33, and 36-38 were rejected under 35 U.S.C. § 103(a) as unpatentable over Sato in view of Gonick et al. (U.S. Patent No. 3,510,333; hereinafter “Gonick”).

In response to the rejections under 35 U.S.C. §103(a), Applicants respectfully submit that amended independent Claim 3 recites novel features clearly not taught or rendered obvious by the applied references.

Independent Claim 3 is directed to a color conversion layer including:

...a fluorescent medium for converting light emitted from an emitting medium to light having a longer wavelength,

¹ See page 6, lines 13-18 of the specification.

particles of an organic material and/or an inorganic material with a coating layer formed from a material suppressing extinction of the fluorescent medium caused by the particles, and

a binder resin in which the fluorescent medium and the particles with the coating layer are dispersed;

wherein the fluorescent medium converts light in a blue range emitted from the emitting medium to light having a longer wavelength, and the color conversion layer has a haze value of 65 to 85%.

Thus, in Applicants' Claim 3, the coating layers of the particles reside only in the surface of the particles. In the color conversion layer, the fluorescent medium and *the particles with the coating layer are dispersed* in the binder resin. In contrast, in Sato, a fluorescent substance and diffusing agent *without* a coating layer are dispersed in the resin.

In a non-limiting embodiment, a comparison of the color conversion layer using particles with a coating layer in Example 3 of the Applicants' specification with the one in Comparative Example 9, which was prepared in the same manner as in Example 3 except that particles without a coating layer is shown in the following table.

		Red color conversion efficiency (%)		After blue LED light radiation For 1000 hours ^{*2)}	
	Haze value (%)	Before heat treatment	After heat treatment ^{*1)}	Change rate of red conversion efficiency (%)	Change in chromaticity (CIEx, CIEy)
Ex. 3	84.8	37.8	36.2	-5	(0.005 or less, 0.005 or less)
Comp. Ex. 9	10.1	31.2	26.2	-10	(0.009,0.008)

^{*1)} Heat treatment at 200°C in an oven for 30 minutes according to the conditions described in Example 8.

*²⁾ Change with the passage of time in the red conversion efficiency and in the chromaticity with the blue LED light radiation for 1000 hours according to the conditions described in Example 8.

Page 4 of the outstanding Office Action, in regard to Sato, asserts that “[t]hough it is not mentioned explicitly, since scattering of light inside the color conversion medium is made high, amount of haze value is high.” However, as is understood from the data in the table from Applicants’ specification reproduced above, when particles without a coating layer (diffusing agent) are used, ***the haze value is very low even though an amount of the particles dispersed are the same.*** Accordingly, the above-mentioned prediction at page 4 of the Office Action is apparently not correct.

Further, in Applicants’ Comparative Example 9, the reason why the red color conversion efficiency and the chromaticity remarkably varied by the heat treatment and the blue LED light radiation for 1000 hours is discussed in [0068] of the present specification as follows:

A cause of the color change based on the heat treatment and the blue LED light radiation test is that the haze value was small, but the following are also presumed: the surface of titanium oxide was active since the surface of the added titanium oxide particles was not coated with alumina; and ***the photocatalyst effect of titanium oxide, and other effects caused extinction or deterioration of the red conversion colorant.*** (Emphasis Added).

Namely, the effect of titanium oxide as a photocatalyst appears with passage of time, and the haze value itself depends on whether the particles (titanium oxide particles) are coated with a coating layer (alumina coating).

Thus, Applicants respectfully submit that Sato fails to teach or suggest “a binder resin in which the fluorescent medium and the particles with the coating layer are dispersed” and “the fluorescent medium converts light in a blue range emitted from the emitting medium to

light having a longer wavelength, and the color conversion layer has a haze value of 65 to 85%,” as recited in Applicants’ independent Claim 3.

Turning now to Gonick, Gonick relates to a rutile TiO₂ opacifying pigment of improved whiteness for paper and paper coating applications. The pigment is composed of crystalline rutile which contains 95% or more of TiO₂ and has a predetermined size and a light scattering coefficient. Column 2, lines 49-53 of Gonick describes that “[t]hese primary rutile particles may be further improved as to other pigment properties such as durability and opacity by applying to them in known manner up to 15 wgt. percent of precipitated alumina, silica or titania calculated respectively as Al₂O₃, SiO₂ and TiO₂.”

Page 6 of the outstanding Office Action asserts that “it would have been obvious … to coat the inorganic scattering particles of Sato et al. with *a coating of alumina, … which has the property of suppressing extinction of the fluorescent material caused by catalytic TiO₂ particle* (Emphasis Added).” However, Gonick does not describe extinction of the fluorescent material can be suppressed with the coating of alumina. Gonick relates to an invention of pigment composed of TiO₂ particles and has nothing to do with a fluorescent material.

Further, the color conversion layer in Claim 3 has a haze value of 65 to 85%. Fig. 3 of the present application is a graph showing the relationships between the haze value and the red color conversion efficiency of Examples 1 to 4 and Comparative Examples 1 to 4. Fig. 5 is a graph showing the relationships between the haze value and the green color conversion efficiency of Examples 5 to 7 and Comparative Examples 5 to 8. As is apparent from these results, particularly high color conversion efficiencies can be obtained when the haze value is 65 to 85%. This fact could not be predicted from Sato and Gonick.

Therefore, Applicants respectfully submit that Claim 3 is not obvious from Sato in view of Gonick.

Thus, Applicants respectfully submit that independent Claim 3 (and all claims depending thereon) patentably distinguishes over Sato and Gonick either alone or in proper combination. Further, Applicants respectfully submit that Yu, Sylvester, and Kuma fail to cure any of the above-noted deficiencies of Sato and Gonick.

Accordingly, Applicants respectfully request that the rejections under 35 U.S.C. §103(a) be withdrawn.

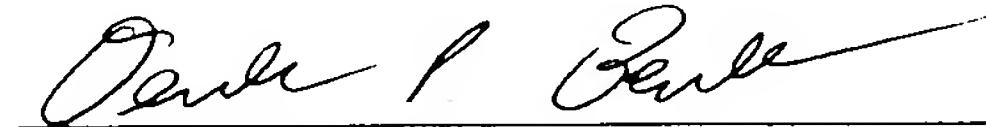
In order to vary the scope of protection recited in the claims, new Claim 39 is added. New Claim 39 finds non-limiting support in the disclosure as originally filed, for example at page 14, line 24 to page 15, line 13.

Therefore, the changes to the claims are not believed to raise a question of new matter.²

Consequently, in view of the present amendment, and in light of the above discussion, the pending claims as presented herewith are believed to be in condition for formal allowance, and an early and favorable action to that effect is respectfully requested.

Respectfully submitted,

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² See MPEP 2163.06 stating that “information contained in any one of the specification, claims or drawings of the application as filed may be added to any other part of the application without introducing new matter.”